

(19)



Europäisches Patentamt  
European Patent Office  
Office européen des brevets



(11) Publication number:

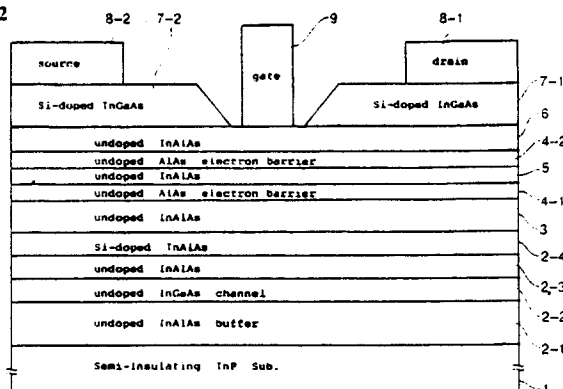
**0 627 768 A3**

(12)

**EUROPEAN PATENT APPLICATION**(21) Application number: **94108463.4**(51) Int. Cl.<sup>6</sup>: **H01L 29/812**(22) Date of filing: **01.06.94**(30) Priority: **01.06.93 JP 130481/93**(43) Date of publication of application:  
**07.12.94 Bulletin 94/49**(84) Designated Contracting States:  
**DE FR GB**(88) Date of deferred publication of the search report:  
**07.06.95 Bulletin 95/23**(71) Applicant: **NEC CORPORATION**  
**7-1, Shiba 5-chome**  
**Minato-ku**  
**Tokyo (JP)**(72) Inventor: **Miyamoto, Hironobu c/o NEC Corporation**  
**7-1, Shiba 5-chome,**  
**Minato-ku, Tokyo (JP)**  
Inventor: **Onda, Kazuhiko c/o NEC Corporation**  
**7-1, Shiba 5-chome,**  
**Minato-ku, Tokyo (JP)**(74) Representative: **Baronetzky, Klaus, Dipl.-Ing. et al**  
**Patentanwälte**  
**Dipl.-Ing. R. Splanemann, Dr. B. Reitzner,**  
**Dipl.-Ing. K. Baronetzky**  
**Tal 13**  
**D-80331 München (DE)**(54) **Field effect transistor with a Schottky gate.**

(57) The invention provides a Schottky barrier structure comprising a Schottky gate electrode (9), a first layer (6) in contact with said Schottky gate electrode and said first layer being made of a first compound semiconductor and a second layer (4-2) in contact

with said first layer and said second layer being made of a second compound semiconductor having a higher conduction band edge than a conduction band edge of said first compound semiconductor.

**FIG.2****EP 0 627 768 A3**



European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 94 10 8463

DOCUMENTS CONSIDERED TO BE RELEVANT				
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)	
X	EP-A-0 522 952 (FRANCE TELECOM) * page 9, line 1 - line 34 * ---	1-4,16, 18	H01L29/812	
X	EP-A-0 452 054 (HUGUES AIRCRAFT COMPANY) * the whole document * ---	1-3,5,14		
X	ELECTRONICS LETTERS, vol.29, no.7, 1 April 1993, ENAGE GB pages 628 - 629 N. IWATA ET AL. 'High performance double-doped InAlAs/InGaAs/InP heterojunction FET with potential for millimetre-wave power applications' * the whole document * ---	1-3,7		
X	US-A-5 206 528 (NASHIMOTO) * the whole document * ---	1,2,4		
P,X	EP-A-0 551 110 (MITSUBISHI DENKI KABUSHIKI KAISHA) * column 14, line 16 - column 15, line 35; figure 1 * ---	1,2,7, 14,15		TECHNICAL FIELDS SEARCHED (Int.Cl.5)
D,A	IEEE ELECTRON DEVICE LETTERS, vol.14, no.5, May 1993, NEW YORK US pages 259 - 261 S. FUJITA ET AL. 'InGaAs/InAlAs HEMT with a strained InGaP Schottky contact layer' ---			H01L
D,A	IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES, vol.37, no.9, September 1989, NEW YORK US pages 1279 - 1285 U.K. MISHRA ET AL. 'The AlInAs-GaInAs HEMT for microwave and millimeter-wave applications' --- -/--			
The present search report has been drawn up for all claims				
Place of search THE HAGUE		Date of completion of the search 6 April 1995	Examiner Baillet, B	
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... &amp; : member of the same patent family, corresponding document</p>				



European Patent  
Office

## EUROPEAN SEARCH REPORT

Application Number  
EP 94 10 8463

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
D,A	PATENT ABSTRACTS OF JAPAN vol. 13, no. 235 (E-766) 30 May 1989 & JP-A-01 041 272 (NEC CORP) 13 February 1989 * abstract *		
	---		
D,A	PATENT ABSTRACTS OF JAPAN vol. 13, no. 235 (E-766) (3583) 30 May 1989 & JP-A-01 041 273 (NEC CORP) 13 February 1989 * abstract *		
	-----		
			TECHNICAL FIELDS SEARCHED (Int.Cl.5)
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 6 April 1995	Examiner Baillet, B
<b>CATEGORY OF CITED DOCUMENTS</b> X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document			